

References

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The influence of intraoral devices on dynamic performance of golf athletes – a pilot study

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Introduction: It is widely accepted that the putt in golf depends primarily on the expertise, concentration, and postural control of the performer, in which, stabilization of the mandibular position is of great importance. Previous studies have shown that this stabilization can be optimized with the use of removable intraoral devices that allow precise contact of the teeth from the two arches [1]. Herein we report influence of the use of intraoral devices (IOD) in the putt performance of golf athletes.

Materials and methods: After study approval by the Ethic Commission of the Cooperativa de Ensino Superior Egas Moniz, athletes from the Centro Nacional de Formação de Golfe do Jamor (CNFGJ) were invited to participate in this study. Following the informed consent a Diagnostic Criteria for Temporomandibular Disorder (DC/TMD) was applied. Individualized IOD were developed for each athlete. Athletes were evaluated at two different stages: (a) initial phase (IP) – on the first day of application of the IOD; and (b) adaptation phase (AP) – after 1 week of frequent use of the IOD. In both cases, 20 putts were analyzed with and without IOD. Sam PuttLab (Science & Motion GmbH) was used for task analysis and performance recording. Linear mixed effects models were used to analyze the effects of the utilization of the IOD and adaptation stage in the balls' distance to the hole (BDH), in the percentage of putt success (PPS), and several measures of technique (club angle on impact, local of impact and club trajectory). The significance of these effects was assessed through the analysis of variance of type III with Kenward-Roger approximation for degrees of freedom.

Results: In this study, 17 volunteer golf athletes were included, 88% (15) were male and the average age was 26.2 (± 6.74) years. The developed linear mixed effects models for BDH and PPS shown to be significantly different from the null model ($\chi^2(3) = 9.6314$, $p \leq .022$ and $\chi^2(3) = 8.194$, $p \leq .042$, respectively). Analysis of variance shown the interaction between the use of the IOD and the adaptation stage to affect significantly the BDH ($F(1,34) = 2.128$, $p \leq .034$), reducing in average 6.78 cm the BDH from the IP without IOD to the AP with IOD. Moreover, it also shown that the use of IOD affects significantly the PPS ($F(1,34) = 7.8140$, $p \leq .008454$), increasing in average 1.6% the PPS.

Discussion and conclusions: Our results show that after reaching a balance period of use with an IOD with the purpose of increasing the stabilization of the mandibular position, there was a significant improvement in accuracy, although there have not been changes in technique of the putt, leading to 1.6% increase in putt accuracy and a decrease of 6.78 cm in the distance of the balls close to the hole. Our results confirm Pae and coworkers' findings describing that the use of IOD promotes an improvement in both isokinetic muscular strength and mental capacity for concentration at the time of impact of the golf club with the ball, which leads to greater precision of movement [2].

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Acknowledgments

The authors would like to acknowledge all the athletes and collaborators at the CNFGJ.

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